Conservation Measure 1- Water Facilities and Operation

- In its current form, the CM is difficult to evaluate with regards to the effects of the operation of the new north Delta diversions on, reverse flows, changes in frequency and volume of flows, Delta outflow, salinity, etc. A finalized set of comments pertaining to this CM will be submitted once the modified version of CM1 that contains operational criteria and adaptive limits is available.
- The bulleted issues identified in 3.4.2.4 should be evaluated for potential inclusion in Ch. 3.6, Table 3.6-4, p 3-42 (e.g., effects of reduced delta outflows).
- The link between facility maintenance actions (3.4.2.5.2) resulting in conservation values is not clear.
- Section 3.4.2.4, Page 3-9, Line 14: The last bullet here seems to be at odds with the effect of the Preliminary Proposal, which generally has the effect of reducing Delta outflow.
- Section 3.4.2.4.3, Page 3-10, Line 32: The phrase beginning with "although" should be deleted. As written it could be taken to mean that through Delta salmon survival has no effect on salmon populations, which is highly unlikely. This notion would render meaningless many of the benefits previously claimed for CM1.
- Editorial Comments
    - Section 3.4.2.4.5, Page 3-11, Line 32: The reader's full understanding of CM1 would be enhanced if its obvious negative tradeoff was identified, at least briefly, prior to page 11 of the description.
    - Section 3.4.2.4.5, Page 3-12, Line 6: Consider inserting the phrase "a longer migration route," in front of "higher".
    - Section 3.4.2.4.5, Page 3-12, Line 35: Modify the phrase after the comma to read something like: "bypass flow criterion are required to minimize the negative transport effect of reduced flows."
    - Section 3.4.2.4.6, Page 3-13, Line 28: The meaning of the paragraph here is unclear. The Preliminary Proposal reduces Delta outflow. The meaning of the second sentence is particularly obscure, and is not particularly illuminated by section 3.4.2.5.1.

Conservation Measures 3, 5 and 7-11

- Specific DFG staff comments relating to these CMs are being provided to and discussed within the Terrestrial Technical Team through a separate process.

Conservation Measure 4- Tidal Natural Communities Restoration

- Editorial
    - Section 3.4.5, Page 3-63, Table 3.4-6: In the "how" column for Objective L2.6 insert a space between "communities" and "restoration".

- Section 3.4.5, Page 3-64, Table 3.4-6: In the "how" column for Objective L3.2 insert a space between "communities" and "creation".
- Section 3.4.5.1.2, Page 3-66, Line 20: Revise the sentence here to read: "…may presently be the only area where…". "last" implies an inevitability that the BDCP should be attempting to correct.

Conservation Measure 13- Invasive Aquatic Vegetation Control

- Controlling IAV in restorations areas will not prevent the spread and reintroduction of IAV within restoration areas.
- This conservation measure seems to be focused on covered fish species, although IAV also negatively affects native plants, other wildlife, and invertebrates. The habitat descriptions under Chapter 2, Section 2.3.4: Natural Communities state that IAV impacts covered native plants, such as soft bird's beak and Suisan Marsh aster, by shading out, displacing, and/or excluding their growth. In addition, the descriptions state that IAV also impacts wildlife and invertebrates by altering habitat plant composition, structure, and chemical characteristics; reducing the availability of food and habitat; and reducing the quality of habitat. Will control efforts only be focused on IAV that exists in habitats occupied by covered fish species? If control efforts are only focused on IAV in covered fish species-occupied areas then invasive species like giant reed will be allowed to continue to spread not only within riparian areas, but into other habitats within the plan area such as restored wetlands, which could lead to the displacement of native plants and wildlife. Many watersheds in southern California (e.g. the Santa Ana River Watershed) have become infested with giant reed due to a lack of control efforts when the species was first introduced, which has significantly altered native riparian habitats (e.g., southern willow-cottonwood riparian forest) and associated populations of sensitive wildlife species (e.g., southwestern willow flycatcher and least Bell's vireo). Although control efforts for giant reed are now being implemented in these watersheds, it is so widespread that control and eradication efforts will require significantly more time and money than would have been required if efforts were initiated earlier. BDCP efforts to control IAV should include all IAV in all aquatic habitat types regardless of whether or not covered fish species are present. In addition, the control effort should be expanded to include all invasive vegetation that exists throughout the habitats (including nonaquatic) of the entire plan area.
- Chapter 3, Section 3.2.14.2.1 Implementation: Required Actions, states that this conservation measure will be implemented by BDCP Implementation Office by applying existing control methods tested and developed by the Department of Boating and Waterways (DBW) to control Egeria densa and water hyacinth, and working with DBW to prioritize established source populations of both species for control.
  - Are these two species the only IAV targeted for control under this conservation measure? As described in the habitat descriptions in Chapter 2, Section 2.3.4: Natural Communities, there are many species of IAV that impacts habitats and covered species in the plan area. All species of IAV (and nonaquatic invasive vegetation if this measure was included to include all habitat types within the plan area) within the plan area should be surveyed and mapped; control/treatment options and timing appropriate to each species and corresponding habitat types should be researched; habitat types should be prioritized for control/treatment of invasive plants based on plan objectives and goals; and invasive plant control/treatment should be implemented within the plan area from an upstream

to downstream approach. Consideration should be given to restoring habitats following implementation of control/treatment efforts to ensure invasive species do not re-infest controlled/treated areas.
    - Identifying the target reduction percentage of IAV the CM intends to contribute to in order to help meet the objectives would make the CM more clear (e.g., objective DTSM2.1).
    - Identifying the financial contribution the IO anticipates giving to the DBW program would make the CM more clear (see CM 14, section 3.4.15.2.1 for comparison).
- In addition to conducting control of IAV, what other actions (i.e., initial and annual mapping, monitoring, progress reporting, etc.) will be implemented under this conservation measure initially and on an annual basis?

Conservation Measure 14- Stockton Deep Water Ship Channel Dissolved Oxygen Levels

- Table 3.4-17 needs to be edited to reflect the "Stockton" DWSC aeration facility
    - Operation of the DWR aeration facility in the "Stockton" DWSC will not reduce stranding of adult white sturgeon at Fremont Weir by 75% over baseline conditions within 15 years of BDCP implementation (WTST2.1 (Passage and Stranding)).
    - Operation of the DWR aeration facility in the "Stockton" DWSC will contribute to improved DO conditions.
- Editorial
    - Section 3.4.15.1, Page 3-146, Line 5: Correct the spelling of "results".

Conservation Measure 15- Predator Control

- The CM states that predators will be removed when sensitive species/life stages are present; this could result in the take of non-target species which would then present permitting challenges.
- The CM states that striped bass control would be conducted where they spawn, this is outside of the plan area (Page 3-153, line 34).
- The desired outcome of CM 15 is not clear with respect to predator-prey relationships.
- Although Biological Opinions address predation at the points of diversion in the south Delta, more could be done to address predation there during the salvage process. For example: Removing (via some sorting process) certain predators from the mass of salvaged fish could improve survival of salvaged fish. Any sense of why w/i-facility predator control has not been proposed as a conservation measure? The plan area does not include much of the area where predator control could be particularly beneficial and efficient, even though those areas are directly impacted by SWP and CVP operations. The Biological Goals/Objective are largely about what goes on in the Delta. The document suggests that predator control could occur outside the plan area. Additionally, there is no mention of what would be done with the predators that are removed.

- Based on discussions at the 3/29/12 BDCP IMT meeting ICF is undertaking a substantial revision of the description of Conservation Measure 15 (predator control) in BDCP Chapter 3 (Section 3.4.16). We encourage this revision, and suggest focusing on the following topic areas:
    - Increase the level of clarity around the idea that CM15 is about reducing predation rates at "hot spots" and "hot periods". As presently written, the text of Section 3.4.16 occasionally seems to drift towards broader notions of general upper trophic level species population control. Examples of this drift include the "how" column text associated with Objective WRCS1.1 in Table 3.4-18, the bullet at line 6 on page 3-153, and the two sentences beginning on page 3-153 at line 32.
    - Prioritize "Hot Spot" sites and periods, and develop/describe preliminary proposals for specific predation reduction actions that will be taken at these sites. As currently written the description of actions under CM15 does not provide sufficient information for the permitting agencies to assess effectiveness or unintended impacts to listed species, the bullets on page 3-153 at lines 18 and 21 are two examples.
    - Consider focusing predation control efforts at water project facilities.
- Section 3.4.16.2, Page 3-150, Line 11: The text here refers to "non-native predator control", yet the subsequent problem statement discusses the native Sacramento pikeminnow.
- Consideration should be given to modifying CM 15 to be primarily a research and pilot study effort, at least until there is enough information to design and prioritize control actions.
    - Section 3.4.16.2, Page 3-152, Line 30: The sentence beginning with "Few" points directly to a general weakness in the problem statement, which is that, the contribution "hot spots" (collectively and individually) make to covered species mortality is unknown. Also, the subsequent first sentence of section 3.4.16.3.1 does not fill this information gap.
- Editorial
    - Section 3.4.16, Page 3-150, Table 3.4-18: In the "how" column for Objective FRCS1.1, insert the word "selectively" in front of "decrease".

Conservation Measure 17- Illegal Harvest Reduction

- Reducing the illegal take of spring-run Chinook salmon in their "over-summer holding" locations is outside of the plan area (Page 3-159, line 17). Is the CM proposing that the Department's Law Enforcement Division (LED) work outside of the plan area under this conservation measure and the corresponding funding?
- The current cost estimates for this CM are out of date and need to be updated. The Departments LED completed an issue statement that included cost estimates and benefits from an increased enforcement presence in the plan area (appendix at the end of this document).

Conservation Measure 20- Recreational User Invasive Species Program

- As currently written it is unclear if the CM can be implemented and the cost to implement the CM has not been defined. The Department contacted ICF to discuss the best approach to move forward and has scheduled a meeting in mid-April. The Department feels that this CM needs significant revision after a funding amount has been determined. Due to the fact that the Department is listed as the implementing agency and has significant expertise on the issue, we would like to rewrite the measure to ensure we can meet the implementation requirements in a cost effective manner. In the event that DFG is not able to contribute to the further development of this CM, we provide the following comments.
- Section 3.4.20.3.1 Implementation: Required Actions, states that this conservation measure will establish a basic inspection and cleaning checklist for watercraft and a certificate program under which all boats and trailers entering Delta waterways will be required to be inspected and, if free of standing water and organisms, would be given a 7-day certificate. Where will these inspection areas be located "entering Delta waterways"; throughout the entire Delta at each and every boat access point? How would the 7-day certificate program be operated? Does the 7-day certificate allow a boat to exit and re-enter the Delta continually over a period of 7 days without re-inspection? A boat that has visited a waterbody with invasive species within that 7-day period that hasn't been properly cleaned, drained, and dried may bring invasive species into the Delta if no re-inspection is required. How will the certificate program be operated to ensure this scenario does not occur?
- Section 3.4.20.3.1 Implementation: Required Actions, states that boats attempting to enter the Delta with standing water or organisms will be denied entry to Delta waterways and boat owners would be required to clean, empty, and dry their watercraft and remove any organisms and standing water that may be present. And if organisms are present, the boat owner may be issued a citation or fine. If a boat is denied entry to the Delta and required to clean, empty, and dry, after what period of time following cleaning, emptying, and drying would the boat be allowed to enter the Delta?
- It is not clear how citations and fines would be issued or who would enforce those restrictions. Section 2301 of the F&G Code: Dreissenid Mussels; Possession, Importation, Shipment, or Transportation Prohibited, prohibits any person from possessing, importing, shipping, or transporting Dreissenid mussels within California and states that anyone who violates Section 2301 is subject to a penalty of up to $1,000, however this section is specific to quagga and zebra mussels. If a boat contains an invasive species that is not a Dreissenid mussel or a Restricted Species under Section 671 of Title 14 of the CCR, then we are unclear which existing regulation or law would allow issuance of a citation or fine for said invasive species. The issuance of a citation or fine for the illegal possession of invasive species would require the presence of a DFG warden or some other authority at inspection sites on some level, which will require additional funding.
- Section 3.4.20.3.1 Implementation: Required Actions, states that DFG will work to educate the public on inspecting and cleaning watercraft and identifying nonnative bivalves, particularly quagga and zebra mussels. Education and outreach actions should encompass all invasive species (or those that propose the greatest threat) that may enter the Delta, not just dreissenid mussels. By what mechanism does BDCP propose DFG implement public education for invasive species (e.g. using signs at boat launch sites, by distributing pamphlets, holding public workshops, etc.)? Does BDCP propose DFG expand or enhance its existing quagga/zebra mussel and invasive species

education programs to fulfill this task, or will BDCP require DFG to create a new program specific to the Delta and/or as specified by the Implementation Office? Will other agencies be required to partner DFG in the public education effort, such as State Parks, Department of Water Resources, Bureau of Reclamation, etc.?

- It is not clear how this CM will be funded and how those funds would be allocated for the duration of the 50-year permit.

Conservation Measure 21- Nonproject Diversions

- It is difficult to evaluate the benefits of this CM (Table 3.4-24) without clearly defining the size and location of the diversions to be remediated in relation to the covered species and their potential life history stage(s).
- Screening diversions will not reduce the diversion of plankton (3-173, line 34 and 3-175, line 5-6).
- Prior to screening any diversions, two years of monitoring should be conducted to determine the entrainment rate.
- The monitoring required above could delay the initial implementation goal (100 cfs/year) of this CM.
- Prioritizing nonproject diversions for screening could also delay the initial implementation goal of this CM.

Appendix

California Department of Fish and Game

Delta/Bay Enforcement Proposal

April 2012

Problem Statement

The San Francisco Bay, the associated delta region, and tributaries are experiencing poaching, water diversions and water pollution events that cannot be handled with existing resources.

Existing Resources include a ten person Delta Bay Enhanced Enforcement Program (DBEEP) team of wardens funded by the Four Pumps Agreement. This group of wardens concentrates their enforcement efforts on salmon and sturgeon regulations in the bay delta region, but also provide enforcement of all fishing regulations, response to pollution events and investigate water diversions. DBEEP works closely with the Department's Special Operations unit (SOU) on cases involving the illegal commercialization of fish taken under the authority of a recreational fishing license. Three DFG enforcement districts have wardens who work the area impacted by this activity. District wardens must split their enforcement time working not only delta issues and other district specific enforcement needs.

The Special Operations Unit (SOU) consists of nine wardens who carry out covert/undercover investigations into the illegal commercialization of fish and wildlife statewide. Priorities for the SOU have shifted in recent years to try and get a handle on the massive illegal commercialization problem taking place in the delta waterways. SOU works nearly 100 percent of their time in the delta when sturgeons enter the water system. The unit works day and night trying to put a stop to the illegal take of sturgeon, the illegal sale and distribution of sturgeon eggs which is processed into caviar, the illegal use of young salmon as sturgeon bait, and the commercialization of many fish species found in the delta. These cases are very labor intensive to make, and require specialized skills and training to bring these poachers to justice.

SOU and DBEEP work very closely on most large illegal commercialization investigations in the delta. This working together brings a well trained group of up to 18 warden's efforts together to try and stop the poaching. Even with 18 wardens working these poaching issues full time, the problem is still as persistent as ever. The commercialization of fish taken under the authority of a recreational license has

grown over the years into a thriving black market where almost every species of fish caught in the delta has a black market for illegal sales. This poaching and illegal commercialization must be causing adverse effects on all fish species in the region including sturgeon, salmon, and striped bass. The poaching activity is not limited to the adults of the species. Juvenile salmon are heavily poached and are used as bait to catch sturgeon to be sold on the black market.

The delta also has a second significant issue that needs additional enforcement attention. In 2007, there were 544 pollution incidents reported to Office of Emergency Services that in some way did, or could have had impacted water quality in the delta or adjacent river systems. Many of these incidents went without a response due to lack of DFG enforcement personnel available to provide a physical response. Fish and Game Wardens are trained first responders, and are generally the only agency to put a law enforcement person on site to conduct a criminal investigation into the cause of the pollution incident. DFG is the lead state agency responsible for ensuring proper clean up is completed for these incidents.

Fish and Game Wardens assigned to the DBEEP squad have the unique ability to concentrate their time and efforts on enforcement of environmental regulations in the San Francisco Bay and delta region. Those enforcement efforts revolve around species like salmon, steelhead and sturgeon, but also include all species in the river system including habitat and pollution issues. This ten person squad has proven to be very effective since their inception, and is an excellent example of what a team of Fish and Game Wardens can do when allowed to direct their efforts at a significant issue such as enforcement with in the San Francisco Bay and delta region. An increase I the number of wardens on the DBEEP team will provide a higher level of protection to all fish species and habitat in the delta, and will allow DFG to work more high priority poaching issues with the increased personnel levels.

Proposed Solution

The goal of this proposed solution is to staff the area covered by the current DBEEP/Four Pumps Agreement with adequate enforcement personnel to manage the poaching, illegal commercialization, water diversions and pollution problems.

Current DBEEP staffing levels:

- 1 Lieutenant Supervisor for first line supervision
- 9 Wardens

Proposed staff increases to DBEEP

- 17 Wardens
- 2 Lieutenant Supervisors
- 1 Lieutenant Specialist
- 1 Captain
- 1 Staff Programmer Analyst (Specialist)
- 1 AGPA, Administrative Support

DBEEP Enforcement Plan staffing levels including existing positions and proposed positions:

- 26 Wardens
- 3 Lieutenant Supervisors
- 1 Lieutenant Specialist
- 1 Captain
- 1 Staff Programmer Analyst (Specialist)
- 1 AGPA, Administrative Support

DBEEP Enforcement Plan Outline

- 1 Captain to manage the program
- 1 AGPA, Administrative Support

- 1 Staff Programmer Analyst (Specialist) to assist LED with data collection and reporting
- 1 Lieutenant Specialist to provide training and administrative support
- Create 2 DBEEP Patrol Squads-Uniform high profile patrol
    - 9 Wardens per Squad
    - 18 Wardens total
    - 2 Lieutenant Supervisors, 1 Supervisor for every 9 Wardens
- Create a DBEEP Covert Unit-non uniform/covert investigations
    - 1 Lieutenant Supervisor
    - 8 Wardens
- Provide an annual $500,000.00 budget enhancement to the Special Operations Unit to cover investigative costs for DBEEP investigations
- Provide DFG Enforcement Districts $100,000 each for overtime or equipment to support the DBEEP enforcement effort

This enforcement plan will allow the Department to begin getting a handle on the poaching, illegal commercialization, and pollution taking place in the DBEEP coverage area. These Wardens will have the time and training to deal with the organized rings of poachers who are constantly working this area in an effort to profit from the illegal commercialization of the fisheries resources. More pollution incidents will get a physical response by a Warden. Warden patrol efforts will be at levels that have never been seen in the area. These high profile enforcement patrols along with the expanded undercover investigative resources will provide enhanced resource protection to the San Francisco Bay/Delta and tributaries that is not found anywhere else in the State.

Delta Bay Enhanced Enforcement Program (DBEEP)

Proposal April 2012

Year 1 Budget

Position	Number	Cost Each	Cost
WardenCadet (New)	17	$ 272,325.00	$ 4,629,525.00
Warden Range B (Existing)	9	$ 187,233.00	$ 1,685,097.00
Lieutenant Specialist (New)	1	$ 288,785.00	$ 288,785.00
Lieutenant Supervisor (New)	3	$ 288,785.00	$ 866,355.00
Lieutenant Supervisor (Existing)	1	$ 175,289.00	$ 175,289.00
Captain (New)	1	$ 319,846.00	$ 319,846.00
AGPA Admin Support (New)	1	$ 104,391.00	$ 104,391.00
Staff Programmer Analyst (Specialist) New	1	$ 105,000.00	$ 105,000.00
Special Operations Unit		$ 500,000.00	$ 500,000.00
District Overtime		$ 300,000.00	$ 300,000.00
Equipment/Boats	6	$ 150,000.00	$ 900,000.00
Admin Overhead 32%			$ 3,159,772.16
Total Year 1 Costs			**$13,034,060.16**

Year 2 Budget

Position	Number	Cost Each	Cost
Warden Range B	26	$ 187,233.00	$ 4,868,058.00

Lieutenant Specialist	1	$ 195,289.00	$ 195,289.00
Lieutenant Supervisor	3	$ 195,289.00	$ 585,867.00
Captain	1	$ 203,419.00	$ 203,419.00
AGPA Admin Support	1	$ 104,391.00	$ 104,391.00
Staff Programmer Analyst (Specialist)	1	$ 105,000.00	$ 105,000.00
Special Operations Unit		$ 500,000.00	$ 500,000.00
District overtime		$ 300,000.00	$ 300,000.00
Admin Overhead 32%			$ 2,195,847.68
Total Year 2 Costs			**$ 9,057,871.68**

The current DBEEP Budget of approximately $1,700,000 per year is included in the proposed budget above.